93% for 0.02% pepsin and from 67 to 91% for 0.002% pepsin. The rooster amino acid digestibility results showed a wide range of values mostly due to the samples with the 2 lowest values and the 2 highest values. The amino acid digestibility values for the other 12 samples were intermediate and generally similar among samples. Correlation statistical analyses between pepsin and amino acid digestibility values showed that the correlation values (r) were generally high and significant for all amino acids when all 16 MBM samples were included in the analysis. However, when the MBM samples with the 2 lowest and the 2 highest rooster digestibility values were not used in the correlation analyses, the correlation coefficient values (r) were generally very low and not significant ($P > 0.05$). The results indicated that the pepsin digestibility assay is only useful for detecting large differences in protein quality among MBM. The pepsin assay was not useful for predicting differences in quality among MBM samples of average or intermediate quality. For example, rooster amino acid digestibility was similar for MBM samples having 0.02% pepsin digestibility values of 80 to 90% and 0.002% pepsin values of 72 to 86%. There also was no clear advantage for using 0.02 versus 0.002% pepsin since the correlation values were similar for both.

Key Words: pepsin digestibility, amino acid digestibility, meat and bone meal, poultry

317 Amino acid digestibility of different soy products. T. Loeffler* and A. B. Batal, *University of Georgia, Athens.*

To determine the digestibility of 8 soy products, a precision-fed rooster TAA assay and a chick AA digestibility assay were conducted. The soybean (SB) products can be grouped into 3 categories: cold pressed soybean meal (SBM), defatted SB, and full-fat SB. Of the cold pressed varieties (unheated), there was an ultra-low trypsin SBM, a low-trypsin SBM, and both a heated and unheated commodity SBM. The defatted SBM was a heated commodity blend. In full-fat SB varieties, there was a high protein ultra-low oligosaccharide, a high-protein and a commodity SB. Semi-purified diets containing dextrose as the main energy source were formulated to meet the bird's nutrient requirements, with each diet containing a different SB product. The TAA rooster assays were traditional precision-fed rooster assays in which 5 cecectomized birds per diet were fasted for 24 h, crop intubated with 35 g of the test diet containing 46.58% cold-pressed or defatted SBM, or 75% full-fat SB, and excreta was then collected for 48 h. For the chick assay, 480 one-day-old chicks were fed a standard corn-SBM starter diet until 17 d of age, and on d 18, the chicks were allowed ad libitum access to the SB-dextrose diets. There were 6 pens of 10 chicks per replication assigned to the 8 SB-dextrose diets. Ileal contents were collected on d 22, dried, ground and analyzed for amino acid contents. Excreta, ileal contents, and diets were analyzed for AA concentration to calculate the amino acid digestibility coefficients. The SBM samples that were genetically modified to have lower trypsin levels had higher AA digestibilities than the commodity cold pressed SBM samples. Heating the SBM negatively impacted the AA digestibility. The high protein SB sample was higher in total AA but there was little difference in the AA digestibility as compared with the commodity control. However, the genetic reduction in the oligosaccharide content of the SB increased the AA digestibility of the SB. Genetic modification of SB can have positive effects on the AA digestibility.

Key Words: TAA, broilers, roosters

318 Effect of crude protein and fat content of diets with similar indispensable amino acid profile on productive performance and egg quality of brown egg laying hens differing in initial body weight. C. Jabbour[1], A. Perez-Bonilla[2], M. Frikha[1], S. Mirzaie[1], J. Berrocoso[1], J. Garcia[2], and G. G. Mateos*[1], *[1]Departamento de Producción Animal, Universidad Politécnica de Madrid, Madrid, Spain, [2]Camar Agroalimentaria S.L, Cedillo del Condado, Toledo, Spain.*

In total of 504 Lohmann Brown hens were used to study the influence of the initial BW of the birds and the crude protein (CP) and fat content of the diet on performance and egg quality traits from 22 to 49 weeks of age. The experiment was completely randomized with 8 treatments arranged factorially with 2 initial BW (1,726 vs. 1,987g) and 4 diets with similar AMEn (2,750 kcal AMEn/ kg) and indispensable (lys, Met+Cys, Thr, and Trp) amino acid contents. Three of these diets differed in the CP level (16.5, 17.5, and 18.5%) otherwise having similar nutrient profile. The fourth diet contained also 18.5% CP but included 3.5% supplemental fat rather than 1.9%. Each treatment was replicated 4 times and the experimental unit was constituted by 21 hens (3 adjacent cages with 7 hens each). Diet did not affect any of the productive performance traits studied. For the entire experimental period egg production (93.2 vs. 90.6; $P \leq 0.05$), egg weight (64.9 vs. 62.4; $P \leq 0.001$), egg mass (59.3 vs. 55.4; $P \leq 0.05$), and average daily feed intake (122 vs.114 g; $P \leq 0.001$) were higher for the heavier than for the lighter pullets. In contrast, BW gain was higher for the lighter pullets (233 vs. 289; $P \leq 0.05$). Hen mortality and FCR (kg/kg) were not affected by initial BW of the pullets. Similarly, shell quality and HU were not affected by dietary treatment or BW of the pullets. In conclusion, CP and fat content of the diet did not affect hen performance or egg quality. Heavier pullets had better egg production and bigger egg size than lighter pullets but feed efficiency was not affected by initial BW. It is concluded that brown laying hens do not need more than 16.5% CP provided that the diets are balanced for key indispensable amino acids. Initial BW of the pullets is important when the market penalizes small egg size.

Key Words: crude protein, fat content, initial body weight, laying hen performance

319 Effect of dietary amino acid density on the global gene expression profile of the chicken intestine. R. Poureslami*, R. Beckstead, and A. B. Batal, *University of Georgia, Athens.*

Protein (namely amino acids; AA) is one of most expensive nutrients thus, establishment of a low-AA dense diet supporting the maximum performance will considerably affect economics of poultry production. Large numbers of attempts have been made to investigate the feasibility of low-AA dense diets. Unfortunately, the data from these studies appears to be contradictory and there is no standard tool available to normalize the data obtained from different strains, ages and experimental conditions. Given that genes and cellular functions are identical in different strains of chickens, a genomic-based tool might be developed to evaluate bird's response to AA density of diet. The objective of this study was to gain insight into the gene-regulation processes of broiler's response to low-AA dense diets. At hatch, Cobb 500 male broiler chicks were obtained from a local hatchery and placed in battery brooders. Birds were fed a starter diet for 3 d. On d 3 of age, birds were weighed and 80 birds were selected and allocated into 20 pens of 4 birds each (10 replicate pens/treatment). Birds were fed either one of the 2 experimental diets from d 4 to d 15 of age, suboptimal diet